

CWP database (supplementary data)

In this database, we consider as CWP all the proteins secreted into the extracellular space as well as proteins located at the interface between the plasma membrane and the cell wall. All CWP contain a signal peptide at their N-terminus targeting the protein to the secretory pathway. Since the signal peptide is cleaved during secretion, its presence in the pre-protein is checked by bioinformatic analysis using *A. thaliana* genomic data (psort.nrib.ac.jp/form.html, www.cbs.dtu.dk/services/TargetP/). Proteins having trans-membrane domains may be found in cell wall proteomic studies as fragments of their extracellular domains produced by proteolysis either *in vivo* or during extraction.

Proteins are distributed in **eight functional classes**: **proteins acting on cell wall polysaccharides** include glycoside hydrolases, glycosyl transferases, polysaccharide lyases, carbohydrate esterases and expansins; **oxido-reductases**; **proteases**; **proteins with interacting domains** such as lectins and proteins with LRR domains; proteins involved in **signaling**; **structural proteins**; **miscellaneous**; and proteins of **unknown function**.

The colour code is as follows:
 proteins having trans-membrane domain(s) according to the Aramemnon database (<http://aramemnon.botanik.uni-koeln.de/>) are in bold characters.
 proteins having a GPI anchor [43]

Functional classification	Functions or putative functions	gene accession number	rosettes (4-5 weeks)	cell suspension culture (7 days)	cell suspension culture (21 days)	etiolated hypocotyls (11 days)	etiolated seedlings grown in liquid medium (14 days)	culture medium etiolated seedlings (14 days)	cell suspension cultures (5 days)	protoplasts (1 h)	protoplasts (3 h)
Proteins acting on cell wall polysaccharides glycoside hydrolases (GH)	glycoside hydrolase family 1 (beta-glucosidase)	At3g18080	1			1					
	glycoside hydrolase family 1 (beta-glucosidase)	At2g44450		1					1		
	glycoside hydrolase family 1 (beta-glucosidase)	At5g25980				1					
	glycoside hydrolase family 1 (beta-glucosidase)	At1g66280								1	1
	glycoside hydrolase family 3 (beta-xylosidase) (ATBXL4)	At5g64570	1					1			
	glycoside hydrolase family 3 (beta-xylosidase) (ATBXL7)	At1g78060	1			1					
	glycoside hydrolase family 3 (beta-xylosidase) (ATBXL5)	At3g19620	1								
	glycoside hydrolase family 3 (xylosidase) (ATBXL1)	At5g49360				1					
	glycoside hydrolase family 3 (beta-glucosidase)	At5g20950	1	1					1	1	1
	glycoside hydrolase family 9 (endo-glucanase)	At1g71380		1					1		
	glycoside hydrolase family 9 (cellulase)	At4g09740						1			
	glycoside hydrolase family 10 (beta-xylanase)	At4g33810	1			1					
	glycoside hydrolase family 16 (xyloglucan endotransferase) (EXGT-A1) (AT-XTH4)	At2g06850	1	1		1					
	glycoside hydrolase family 16 (endoxyloglucan transferase) (EXGT-A4) (AT-XTH5)	At5g13870				1					
	glycoside hydrolase family 16 (endoxyloglucan transferase) (AT-XTH11)	At3g48580							1	1	1
	glycoside hydrolase family 16 (xyloglucan:xyloglucosyl transferase) (XTR6) (AT-XTH23)	At4g25810		1					1		
	glycoside hydrolase family 16 (xyloglucan endotransferase) (meri-5) (AT-XTH24)	At4g30270		1		1					
	glycoside hydrolase family 16 (xyloglucan endotransferase) (EXGT-A3) (AT-XTH27)	At2g01850						1			
	glycoside hydrolase family 17 (endo-1,3-β-D-glucosidase) (BG2) (PR2)	At3g57260	1								
	glycoside hydrolase family 17 (endo-1,3-β-D-glucosidase) (BG3)	At3g57240	1								
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At3g55430	1								
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At3g57270	1								
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At3g07320			1						
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At1g66250				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At2g01630				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At3g13560				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At4g31140				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At5g58090				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At1g11820				1					
	glycoside hydrolase family 17 (beta-1,3-glucosidase)	At4g16260	1	1							
	glycoside hydrolase family 18 (chitinase)	At4g19810	1								
	glycoside hydrolase family 19 (chitinase)	At4g01700		1							
	glycoside hydrolase family 18 (chitinase)	At5g24090							1		
	glycoside hydrolase family 19 (chitinase)	At3g54420		1							
	glycoside hydrolase family 19 (chitinase)	At3g12500							1		
	glycoside hydrolase family 19 (chitinase)	At2g43610								1	
	glycoside hydrolase family 20 (N-acetyl-beta-glucosaminidase)	At1g65590				1			1	1	1
	glycoside hydrolase family 20 (N-acetyl-beta-glucosaminidase)	At3g55260				1					
	glycoside hydrolase family 27 (alpha-galactosidase/meibiase)	At5g08380	1						1	1	1
	glycoside hydrolase family 27 (alpha-galactosidase/meibiase)	At3g26380	1				1				

	glycoside hydrolase family 28 (polygalacturonase)	At4g23500	1							
	glycoside hydrolase family 28 (polygalacturonase)	At1g02790						1		
	glycoside hydrolase family 28 (polygalacturonase)	At2g33160						1		
	glycoside hydrolase family 28 (polygalacturonase)	At3g16850				1				
	glycoside hydrolase family 28 (polygalacturonase)	At5g41870							1	
	glycoside hydrolase family 29 (alpha-L-fucosidase)	At2g28100						1		
	glycoside hydrolase family 31 (alpha-xylosidase) (XYL1)	At1g68560	1	1		1			1	1
	glycoside hydrolase family 32 (beta-fructofuranosidase)	At3g13790	1			1			1	1
	glycoside hydrolase family 32 (fructosidase/invertase) (FRUCT3)	At1g62660				1				
	glycoside hydrolase family 35 (beta-galactosidase) (BGAL1)	At3g13750	1	1						
	glycoside hydrolase family 35 (beta-galactosidase)	At5g63810		1		1			1	1
	glycoside hydrolase family 35 (beta-galactosidase) (BGAL6)	At5g63800	1							
	glycoside hydrolase family 35 (beta-galactosidase) (BGAL8)	At2g28470	1							
	glycoside hydrolase family 35 (beta-galactosidase)	At1g77410						1		
	glycoside hydrolase family 38 (alpha-mannosidase)	At5g13980	1							
	glycoside hydrolase family 38 (alpha-mannosidase)	At3g26720							1	1
	glycoside hydrolase family 51 (alpha-arabinofuranosidase)	At3g10740				1		1		
	glycoside hydrolase family 79 (endo-beta-glucuronidase/heparanase)	At5g34940				1				
	glycoside hydrolase family 79 (endo-beta-glucuronidase/heparanase)	At5g07830	1							
glycosyl transferases (GT)	glycosyl transferase family 2 (cellulose synthase) (ATCesA8) (IRX1)	At4g18780	1							
	glycosyl transferase family 31 (homolog to <i>N. tabacum</i> Avr9 elicitor response protein)	At3g14960						1		
polysaccharide lyases (PL)	polysaccharide lyase family 1 (pectate lyase)	At4g24780						1		
	polysaccharide lyase family 1 (pectate lyase)	At5g48900		1				1		
carbohydrate esterases	pectin methyltransferase	At1g75160	1	1		1				
	pectin methyltransferase	At1g41830	1	1						
	carbohydrate esterase family 8 (pectin methyltransferase) (PME3)	At3g14310	1	1		1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At2g19150						1		
	carbohydrate esterase family 8 (pectin methyltransferase)	At2g47030						1		
	carbohydrate esterase family 8 (pectin methyltransferase)	At3g43270				1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At4g33220				1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At4g33230				1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At5g53370				1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At3g05610				1				
	carbohydrate esterase family 8 (pectin methyltransferase)	At1g11580				1				
	carbohydrate esterase family 13 (pectin acylesterase)	At5g45280	1							
	carbohydrate esterase family 13 (pectin acylesterase)	At4g19410	1	1						
expansins	alpha-expansin (ATHEXP ALPHA 1.2) (AIEXP41)	At1g69530	1							
	alpha-expansin (ATHEXP ALPHA 1.6) (AIEXP44)*	At2g39700	1	1						
	alpha-expansin (ATHEXP ALPHA 1.8) (AIEXP46)*	At2g28950	1							
	alpha-expansin (ATHEXP ALPHA 1.10) (AIEXP48)	At5g02260				1				
	alpha-expansin (ATHEXP ALPHA 1.14) (AIEXP411)	At1g20190	1			1				
	homolog to expansin (ATHEXP BETA 2.1) (AIEXL1)	At3g45970		1		1			1	
	homolog to expansin (ATHEXP BETA 2.3) (AIEXL3)	At3g45960		1						
	homolog to expansin (expansin related precursor 3) (EXR3)	At2g18660	1							

Proteins with interacting domains (with proteins or polysaccharides)	homolog to lectin (hevein domain)	At1g78830	1	1		1			1	1	1
	homolog to lectin (hevein domain)	At1g78850	1	1		1					
	homolog to lectin (hevein domain)	At1g78860	1	1		1					
	homolog to lectin (egume lectin domains)	At3g15356	1	1							1
	homolog to lectin (egume lectin domains)	At3g16530	1							1	1
	homolog to lectin (egume lectin domains)	At5g03350	1								
	homolog to lectin (egume lectin domains)	At1g53070	1	1						1	1
	disease resistance protein (LRR domains)	At1g33590	1				1				1
	disease resistance protein (LRR domains)	At3g20820	1				1				
	disease resistance protein (LRR domains)	At3g24480					1				
	disease resistance protein (LRR domains)	At2g34930	1								
	expressed protein (LRR domains)	At5g23400	1	1							
	expressed protein (LRR domains)	At1g33600	1								
	homolog to carrot EDGP and tomato XEGIP	At1g03230	1				1				1
	homolog to plant invertase/pectin methyltransferase inhibitor (PMEI)	At1g03220			1		1				1
	XEGIP	At1g03220	1				1				1
	PGIP1	At5g06860	1	1			1				1
	homolog to PGIP1 (LRR protein FLR1)	T23B7.10	1								
	PGIP2	At5g06870	1	1							
	homolog to <i>Phaseolus vulgaris</i> PGIP2 (LRR domains)	At5g12940					1				1
	homolog to plant invertase/pectin methyltransferase inhibitor (PMEI)	At1g47960	1								
	homolog to plant invertase/pectin methyltransferase inhibitor (PMEI)	At5g64620	1								
	homolog to plant invertase/pectin methyltransferase inhibitor (PMEI)	At2g47050		1							
	homolog to cysteine proteinase inhibitor	At4g16500	1				1				1
	homolog to serine proteinase inhibitor	At1g73260									1
	homolog to miraculin (protease inhibitor Kunitz)	At1g17860	1				1				
	homolog to cystatin	At5g47550	1								
	expressed protein (LysM domain)	At1g21880				1					
	expressed protein (LysM domain)	At2g17120				1					
	homolog to transducin family protein/WD-40 repeat family protein	At5g08390		1							
	Signaling	arabinogalactan protein (AGP12)	At3g13520								1
		arabinogalactan protein (AGP13)	At4g26320								1
		arabinogalactan protein (AGP14)	At5g56540								1
arabinogalactan protein (AGP15)		At5g11740								1	
arabinogalactan protein (AGP16)		At2g46330								1	
arabinogalactan protein (AGP20)		At3g61640								1	
arabinogalactan protein (AGP21)		At1g55330								1	
arabinogalactan protein (AGP22)		At5g53250								1	
arabinogalactan protein (AGP23)		At3g57690								1	
arabinogalactan protein (AGP24)		At5g40730								1	
arabinogalactan protein (AGP40)		At3g20865								1	
arabinogalactan protein (AGP41)		At5g24105								1	
fascilin-like arabinogalactan protein (FLA1)		At5g55730	1			1	1				
fascilin-like arabinogalactan protein (FLA7)		At2g04780				1					
fascilin-like arabinogalactan protein (FLA8)		At2g45470				1					
fascilin-like arabinogalactan protein (FLA10)		At3g60900				1					
homolog to COBRA (AtCOBL7)		At4g16120				1					
weakly homolog to COBRA (AtCOBL10)		At3g20580					1				
homolog to leucine-rich repeat receptor protein kinase		At2g29000					1				
homolog to CLAVATA1 (putative receptor kinase)		At5g05160	1								
homolog to receptor-kinase_WAKL subfamily (AtWAKL10, WLK2)	At1g79680					1					
homolog to S-Jocus protein kinases	At1g61500		1								
Structural proteins	glycine-rich protein	At2g05580				1					
	homolog to proline-rich protein	At1g28290				1					
	homolog to <i>N. tabacum</i> pistil specific extensin-like protein (PELP)	At2g34700				1					
	LRR-extensin (AtLRXS)	At4g18670				1					

Miscellaneous	homolog to lipase	At1g28600	1						
	homolog to anther specific proline-rich protein APG (lipase acylhydrolase domain)	At1g29670	1			1			
	weakly homolog to anther-specific proline-rich protein APG (lipase/acylhydrolase domain)	At3g14220				1		1	
	homolog to anther-specific proline-rich protein APG (lipase/acylhydrolase domain)	At1g54000						1	1
	homolog to anther-specific proline-rich protein APG (lipase/acylhydrolase domain)	At1g54010				1		1	1
	homolog to anther-specific proline-rich protein APG (lipase/acylhydrolase domain)	At4g16220				1			
	homolog to glycerophosphodiesterase (GPD1)	At5g55480			1				
	homolog to glycerophosphodiesterase (GPD2)	At4g26690			1				
	non-specific lipid transfer protein 2 (LTP2)	At2g38530				1			
	non-specific lipid-transfer protein 5 (LTP5)	At3g51600	1						
	homolog to lipid transfer protein	At1g27950			1			1	1
	weakly homolog to <i>Aspergillus oryzae</i> phosphatidyl glycerol phosphatidylinositol transfer protein	At3g44100	1						
	PR1	At2g14610	1						
	homolog to <i>Lycopersicon esculentum</i> osmotin	At2g28790				1			
	homolog to thaumatin (PR5)	At1g75040	1				1		
	homolog to thaumatin (PR5)	At1g73620				1			
	homolog to dirigent protein	At4g23690		1					
	homolog to dirigent protein	At1g65870	1						
	ribonuclease RNS1	At2g02990		1				1	
	homolog to <i>Brassica napus</i> dehydration stress-induced protein	At2g22170				1		1	
	homolog to apospory-associated protein	At4g25900	1	1				1	1
	homolog to aldose-1-epimerase	At3g47800						1	
	homolog to strictosidine synthase	At1g74000		1					1
	homolog to purple acid phosphatase	At4g36350		1					
	homolog to purple acid phosphatase	At2g16430		1					
	homolog to <i>Phaseolus vulgaris</i> iron(III)-zinc(II) purple acid phosphatase	At5g34850				1			
	weakly homolog to acid phosphatase	At1g09870					1		
	homolog to acid phosphatase	At5g51260				1			
	homolog to acid phosphatase	At4g29270				1			
	homolog to <i>Nicotiana tabacum</i> phi-I (EXORDIUM)	At4g08950		1					
	homolog to <i>Nicotiana tabacum</i> phi-I	At5g09440				1			
	homolog to <i>Nicotiana tabacum</i> phi-I	At5g64260				1			
	homolog to <i>Nicotiana tabacum</i> phi-I	At1g35140		1					
	homolog to phosphatidylinositol transfer protein (AtSEC14)	At2g21540				1			
	homolog to calreticulin	At1g08450		1					
	homolog to quinoprotein glucose dehydrogenase (weakly homolog to hedgehog interacting protein HIPL1)	At1g74790			1				
	homolog to quinoprotein glucose dehydrogenase (weakly homolog to hedgehog interacting protein HIPL2)	At5g62630			1				
	stellacyanin AtSTC1, BCB (blue copper binding protein)	At5g20230			1				
	plantacyanin ARPN (blue copper binding protein)	At2g02850	1						
	udilacyanin II (blue copper binding protein)	At2g44790			1				
	early nodulin AEN6 homolog to blue copper binding protein	At5g25090			1				
	early nodulin AEN7 homolog to blue copper binding protein	At2g25060			1				
	early nodulin AEN12 homolog to blue copper binding protein	At4g27520			1				
	early nodulin AEN20 homolog to blue copper binding protein	At4g12880	1			1		1	
	homolog to <i>Cossypium hirsutum</i> vicilin (alpha globulin A or B)	At3g22640				1			
	homolog to phosphoesterase	At1g13750						1	1
	homolog to ceramidase	At2g38010				1			
	homolog to fimbrin AtFim1	At2g04750	1						

Unknown function	expressed protein	At1g21670	1	1				1	1		
	expressed protein	At4g34180		1							
	expressed protein	At1g76020	1								
	expressed protein	At1g71040	1								
	expressed protein	At5g18860		1					1		1
	expressed protein	At5g24460		1							
	expressed protein	At4g24890		1							
	expressed protein	At5g19230				1					
	expressed protein	At5g19250				1					
	expressed protein	At1g62070						1			
	expressed protein	At2g41150						1			
	expressed protein	At3g42160					1				
	expressed protein	At1g51630									
	expressed protein (DUF26)	At3g22060	1							1	
	expressed protein (DUF26)	At5g41280				1					
	expressed protein (DUF26)	At5g41290				1					
	expressed protein (DUF231)	At5g06230					1				
	expressed protein (DUF288)	At3g57420	1								
	expressed protein (DUF538)	At3g07470						1			
	expressed protein (auxin-responsive protein AIR12) (DUF568)	At3g07390							1		
	expressed protein (DUF642)	At3g08030	1	1			1			1	
	expressed protein (DUF642)	At5g11420	1				1				
	expressed protein (DUF642)	At2g41800		1						1	
	expressed protein (DUF642)	At5g25460									
	expressed protein (ML domain - MD-2-related lipid recognition domain)	At5g23820							1		
	expressed protein (MATH domain)	At5g26260					1			1	1
	expressed protein (MATH domain)	At5g26280					1			1	
expressed protein (MATH domain)	At3g20370					1					